

WHAT IS CLAIMED IS:

1. A pressure-sensitive adhesive polymer comprising a reaction product of a C₁ to C₂₀ alkyl (meth)acrylate, an ethylenically unsaturated carboxylic acid, a C₂ to C₈ hydroxyalkyl (meth)acrylate, a vinyl aromatic, optionally a ethylenically unsaturated monomer containing sulfonic acid, and optionally a vinyl ester of a carboxylic acid.
2. The pressure sensitive adhesive polymer of claim 1, wherein the C₁ to C₂₀ alkyl (meth)acrylate is selected from the group consisting of methyl (meth)acrylate, ethyl (meth)acrylate, propyl (meth)acrylate, n-butyl (meth)acrylate, isobutyl (meth)acrylate, t-butyl (meth)acrylate, pentyl (meth)acrylate, hexyl (meth)acrylate, cyclohexyl (meth)acrylate, benzyl (meth)acrylate, 2-ethylhexyl (meth)acrylate, heptyl (meth)acrylate, n-octyl (meth)acrylate, nonyl (meth)acrylate, decyl (meth)acrylate, undecyl (meth)acrylate, dodecyl (meth)acrylate, tridecyl (meth)acrylate, lauryl (meth)acrylate, stearyl (meth)acrylate, isobornyl (meth)acrylate, norbornyl (meth)acrylate, 4-tertbutylcyclohexyl (meth)acrylate, 3,3,5-trimethylcyclohexyl (meth)acrylate, dimethyl maleate, n-butyl maleate, alkylene glycol di(meth)acrylates, ethylene glycol di(meth)acrylate, 1,3-butylene glycol di(meth)acrylate, 1,4-butylene glycol di(meth)acrylate, propylene glycol (meth)acrylate, 1,6-hexanediol di(meth)acrylate, dipropylene glycol di(meth)acrylate, tripropylene glycol di(meth)acrylate, trimethylolpropane tri(meth)acrylate, cyclopentadienyl (meth)acrylate, carbodiimide (meth)acrylate, t-butylaminoethyl (meth)acrylate, 2-t-butylaminoethyl (meth)acrylate, N,N-dimethylaminoethyl (meth)acrylate, and mixtures thereof.
3. The pressure sensitive adhesive polymer of claim 1, wherein the ethylenically unsaturated carboxylic acid is selected from the group consisting of (meth)acrylic acid, maleic acid, fumaric acid, itaconic acid, ethacrylic acid, crotonic acid, citraconic acid, cinnamic acid, phthalic acid, isophthalic acid, terephthalic acid, tetrahydrophthalic acid, hexahydrophthalic acid, tetrabromophthalic acid, trimellitic acid, pyromellitic acid, 1,4,5,6,7,7-hexachloro-5-norbornene-2,3-dicarboxylic acid, succinic acid, 2,6-

naphthalenedicarboxylic acid, glutaric acid, sebacic acid, azelaic acid, 1,4-cyclohexanedicarboxylic acid, 1,3-cyclohexanedicarboxylic acid, and mixtures thereof.

4. The pressure sensitive adhesive polymer of claim 1, wherein the C₂ to C₈ hydroxyalkyl (meth)acrylate is selected from the group consisting of hydroxyethyl (meth)acrylate, hydroxypropyl (meth)acrylate, hydroxybutyl (meth)acrylate, and mixtures thereof.
5. The pressure sensitive adhesive polymer of claim 1, wherein the vinyl aromatic is selected from the group consisting of styrene, α -methyl styrene, o-chlorostyrene, chloromethyl styrene, α -phenyl styrene, styrene sulfonic acid, salts of styrene sulfonic acid, para-acetoxystyrene, divinylbenzene, diallyl phthalate, vinyl toluene, vinyl naphthalene, and mixtures thereof.
6. The pressure sensitive adhesive polymer of claim 1, wherein the ethylenically unsaturated monomer containing sulfonic acid is selected from the group consisting of vinyl sulfonic acid, arylsulfonic acid, sulfopropyl acrylate, (meth)acryloyloxynaphthalenesulfonic acid, 2-acrylamido-2-methylpropanesulfonic acid, acryloyloxybenzenesulfonic acid, salts of any of the preceding, and mixtures thereof.
7. The pressure-sensitive adhesive polymer of claim 1, wherein the polymer further comprises in the reaction product a monomer that is at least one of a monomer having at least two nonconjugated ethylenically unsaturated double bonds and a monomer that has at least one of an epoxy group, a hydroxyl group, a N-methylol group, and a carbonyl group.
8. The pressure-sensitive adhesive polymer of claim 7, wherein the monomer is reacted into the reaction product in an amount up to about 10% by weight of the reaction product.
9. The pressure-sensitive adhesive polymer of claim 1, wherein the polymer further comprises in the reaction product a monomer selected from the group consisting of N-alkylolamides of alpha, beta-monoethylenically unsaturated carboxylic acids having 3-10 carbon atoms; esters of N-alkylolamides of alpha-, beta-monoethylenically unsaturated carboxylic acids having 3 to 10 carbon atoms with alkanols having 1 to 4 carbon atoms;

monomers having two vinyl radicals; monomers having two vinylidene radicals; monomers having two alkenyl radicals; di-esters of dihydric alcohols with alpha, beta-mono ethylenically unsaturated mono carboxylic acids; N-methylolacrylamide; N-methylolmethacrylamide; alkylene glycol di(meth)acrylates; ethylene glycol diacrylate; 1,2-propylene glycol diacrylate; 1,3-propylene glycol diacrylate; 1,3-butylene glycol diacrylate; 1,4-butylene glycol diacrylate; ethylene glycol dimethacrylate; 1,2-propylene glycol dimethacrylate; 1,3-propylene glycol dimethacrylate; 1,3-butylene glycol dimethacrylate; 1,4-butylene glycol dimethacrylate; divinylbenzene; vinyl methacrylate; vinyl acrylate; allyl methacrylate; allyl acrylate; diallyl maleate; diallyl fumarate; methylenebisacrylamide; cyclopentadienyl acrylate, and mixtures thereof.

10. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product of a C₁ to C₂₀ alkyl (meth)acrylate, an ethylenically unsaturated carboxylic acid, a C₂ to C₈ hydroxyalkyl (meth)acrylate, a vinyl aromatic, a ethylenically unsaturated monomer containing sulfonic acid, and optionally a vinyl ester of a carboxylic acid.
11. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product of a C₁ to C₂₀ alkyl (meth)acrylate, an ethylenically unsaturated carboxylic acid, a C₂ to C₈ hydroxyalkyl (meth)acrylate, a vinyl aromatic, a ethylenically unsaturated monomer containing sulfonic acid, and a vinyl ester of a carboxylic acid.
12. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product of 2-ethylhexyl acrylate, acrylic acid, hydroxypropyl acrylate, styrene, optionally sodium vinyl sulfonate, and optionally vinyl acetate.
13. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product of 2-ethylhexyl acrylate, acrylic acid, hydroxypropyl acrylate, styrene, sodium vinyl sulfonate, and optionally vinyl acetate.
14. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product of 2-ethylhexyl acrylate, acrylic acid, hydroxypropyl acrylate, styrene, sodium vinyl sulfonate, and vinyl acetate.

15. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product by weight of from about 80% to about 99% C₁ to C₂₀ alkyl (meth)acrylate, from about 0.25% to about 2.5% ethylenically unsaturated carboxylic acid, from greater than 0% to about 3% C₂ to C₈ hydroxyalkyl (meth)acrylate, from greater than 0% to about 3% vinyl aromatic, from 0% to about 1% ethylenically unsaturated monomer containing sulfonic acid, and from 0% to about 8% vinyl ester of a carboxylic acid.
16. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product by weight of from about 80% to about 99% C₁ to C₂₀ alkyl (meth)acrylate, from about 0.25% to about 2.5% ethylenically unsaturated carboxylic acid, from greater than 0% to about 3% C₂ to C₈ hydroxyalkyl (meth)acrylate, from greater than 0% to about 3% vinyl aromatic, from greater than 0% to about 1% ethylenically unsaturated monomer containing sulfonic acid, and from 0% to about 8% vinyl ester of a carboxylic acid.
17. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product by weight of from about 80% to about 99% C₁ to C₂₀ alkyl (meth)acrylate, from about 0.25% to about 2.5% ethylenically unsaturated carboxylic acid, from greater than 0% to about 3% C₂ to C₈ hydroxyalkyl (meth)acrylate, from greater than 0% to about 3% vinyl aromatic, from greater than 0% to about 1% ethylenically unsaturated monomer containing sulfonic acid, and from greater than 0% to about 8% vinyl ester of a carboxylic acid.
18. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product by weight of from about 80% to about 99% 2-ethylhexyl acrylate, from about 0.25 to about 2.5% acrylic acid, from greater than 0% to about 3% hydroxypropyl acrylate, from greater than 0% to about 3% styrene, from 0% to about 1% sodium vinyl sulfonate, and from 0% to about 8% vinyl acetate.
19. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product by weight of from about 85% to about 96% 2-ethylhexyl acrylate, from

about 0.25 to about 2% acrylic acid, from greater than 0% to about 3% hydroxypropyl acrylate, from greater than 0% to about 3% styrene, from greater than 0% to about 1% sodium vinyl sulfonate, and 0% to about 8% vinyl acetate.

20. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product by weight of from about 85% to about 96% 2-ethylhexyl acrylate, from about 0.25 to about 2% acrylic acid, from greater than 0% to about 3% hydroxypropyl acrylate, from greater than 0% to about 3% styrene, from greater than 0% to about 1% sodium vinyl sulfonate, and from greater than 0% to about 8% vinyl acetate.
21. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product by weight of from about 85.8% to about 95.55% 2-ethylhexyl acrylate, from about 0.25 to about 2% acrylic acid, about 2% hydroxypropyl acrylate, about 2% styrene, about 0.2% sodium vinyl sulfonate, and from 0% to about 8% vinyl acetate.
22. The pressure sensitive adhesive polymer of claim 1, wherein the polymer comprises a reaction product by weight of from about 85.8% to about 95.55% 2-ethylhexyl acrylate, from about 0.25 to about 2% acrylic acid, about 2% hydroxypropyl acrylate, about 2% styrene, about 0.2% sodium vinyl sulfonate, and from greater than 0% to about 8% vinyl acetate.
23. The pressure-sensitive adhesive polymer of claim 1 further comprising at least one of a tackifier, an antifoam, a plasticizer, a surfactant, a wetting agent, a protective colloid, filler, a coloring agent, an antiseptic, a biocide, a dispersing agent, a thickening agent, a thixotropic agent, an antifreeze agent, a pH adjusting agent, a corrosion inhibitor, an ultraviolet light stabilizer, a crosslinking promoter, an antioxidant, and another polymer.
24. The pressure-sensitive adhesive polymer of claim 1, wherein the polymer has a glass transition temperature $\leq -10^{\circ}\text{C}$.
25. The pressure-sensitive adhesive polymer of claim 1, wherein the polymer has a glass transition temperature ranging from about -85°C to -10°C .

26. The pressure-sensitive adhesive polymer of claim 1, wherein the polymer has a glass transition temperature ranging from about -85°C to -54°C.
27. The pressure-sensitive adhesive polymer of claim 12, wherein the polymer has a glass transition temperature $\leq -10^{\circ}\text{C}$.
28. The pressure-sensitive adhesive polymer of claim 12, wherein the polymer has a glass transition temperature ranging from about -85°C to -10°C.
29. The pressure-sensitive adhesive polymer of claim 12, wherein the polymer has a glass transition temperature ranging from about -85°C to -54°C.
30. The pressure-sensitive adhesive polymer of claim 1, wherein the polymer has at least one of:
 - a. a 180° peel as measured by ASTM 3330 on polyethylene at room temperature of from about 70 N/m (0.4 lb/in) to about 210 N/m (1.2 lb/in),
 - b. a 180° peel as measured by ASTM 3330 on corrugated paper at room temperature of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in),
 - c. a 180° peel as measured by ASTM 3330 on polyethylene at -23.3°C (-10°F) of from about 8.7 N/m (0.05 lb/in) to about 35 N/m (0.2 lb/in),
 - d. a 180° peel as measured by ASTM 3330 on corrugated paper at -23.3°C (-10°F) of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in), and
 - e. a shear holding strength as measured by ASTM D3654 of from 50 minutes to about 2000 minutes.
31. The pressure-sensitive adhesive polymer of claim 1, wherein the polymer has:
 - a. a 180° peel as measured by ASTM 3330 on polyethylene at room temperature of from about 70 N/m (0.4 lb/in) to about 210 N/m (1.2 lb/in),
 - b. a 180° peel as measured by ASTM 3330 on corrugated paper at room temperature of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in),
 - c. a 180° peel as measured by ASTM 3330 on polyethylene at -23.3°C (-10°F) of from about 8.7 N/m (0.05 lb/in) to about 35 N/m (0.2 lb/in),

- d. a 180° peel as measured by ASTM 3330 on corrugated paper at -23.3°C (-10°F) of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in), and
 - e. a shear holding strength as measured by ASTM D3654 of from 50 minutes to about 2000 minutes.
32. The pressure-sensitive adhesive polymer of claim 12, wherein the polymer has at least one of:
- a. a 180° peel as measured by ASTM 3330 on polyethylene at room temperature of from about 70 N/m (0.4 lb/in) to about 210 N/m (1.2 lb/in),
 - b. a 180° peel as measured by ASTM 3330 on corrugated paper at room temperature of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in),
 - c. a 180° peel as measured by ASTM 3330 on polyethylene at -23.3°C (-10°F) of from about 8.7 N/m (0.05 lb/in) to about 35 N/m (0.2 lb/in),
 - d. a 180° peel as measured by ASTM 3330 on corrugated paper at -23.3°C (-10°F) of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in), and
 - e. a shear holding strength as measured by ASTM D3654 of from 50 minutes to about 2000 minutes.
33. The pressure-sensitive adhesive polymer of claim 12, wherein the polymer has:
- a. a 180° peel as measured by ASTM 3330 on polyethylene at room temperature of from about 70 N/m (0.4 lb/in) to about 210 N/m (1.2 lb/in),
 - b. a 180° peel as measured by ASTM 3330 on corrugated paper at room temperature of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in),
 - c. a 180° peel as measured by ASTM 3330 on polyethylene at -23.3°C (-10°F) of from about 8.7 N/m (0.05 lb/in) to about 35 N/m (0.2 lb/in),
 - d. a 180° peel as measured by ASTM 3330 on corrugated paper at -23.3°C (-10°F) of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in), and
 - e. a shear holding strength as measured by ASTM D3654 of from 50 minutes to about 2000 minutes.
34. An aqueous dispersion comprising the pressure-sensitive adhesive polymer of claim 1.

35. The aqueous dispersion of claim 34 further comprising at least one of a tackifier, an antifoam, a plasticizer, a surfactant, a wetting agent, a protective colloid, filler, a coloring agent, an antiseptic, a biocide, a dispersing agent, a thickening agent, a thixotropic agent, an antifreeze agent, a pH adjusting agent, a corrosion inhibitor, an ultraviolet light stabilizer, a crosslinking promoter, an antioxidant, and another polymer.
36. An aqueous dispersion comprising the pressure-sensitive adhesive polymer of claim 12.
37. The aqueous dispersion of claim 36 further comprising at least one of a tackifier, an antifoam, a plasticizer, a surfactant, a wetting agent, a protective colloid, filler, a coloring agent, an antiseptic, a biocide, a dispersing agent, a thickening agent, a thixotropic agent, an antifreeze agent, a pH adjusting agent, a corrosion inhibitor, an ultraviolet light stabilizer, a crosslinking promoter, an antioxidant, and another polymer.
38. A process comprising applying the polymer of claim 1 to a substrate.
39. The process of claim 38 further comprising disposing a release liner over the polymer.
40. The process of claim 38, wherein the polymer comprises a reaction product of a C_1 to C_{20} alkyl (meth)acrylate, an ethylenically unsaturated carboxylic acid, a C_2 to C_8 hydroxyalkyl (meth)acrylate, a vinyl aromatic, a ethylenically unsaturated monomer containing sulfonic acid, and optionally a vinyl ester of a carboxylic acid.
41. The process of claim 38, wherein the polymer comprises a reaction product of a C_1 to C_{20} alkyl (meth)acrylate, an ethylenically unsaturated carboxylic acid, a C_2 to C_8 hydroxyalkyl (meth)acrylate, a vinyl aromatic, a ethylenically unsaturated monomer containing sulfonic acid, and a vinyl ester of a carboxylic acid.
42. The process of claim 38, wherein the polymer comprises a reaction product of 2-ethylhexyl acrylate, acrylic acid, hydroxypropyl acrylate, styrene, optionally sodium vinyl sulfonate, and optionally vinyl acetate.

43. The process of claim 38, wherein the polymer comprises a reaction product of 2-ethylhexyl acrylate, acrylic acid, hydroxypropyl acrylate, styrene, sodium vinyl sulfonate, and optionally vinyl acetate.
44. The process of claim 38, wherein the polymer comprises a reaction product of 2-ethylhexyl acrylate, acrylic acid, hydroxypropyl acrylate, styrene, sodium vinyl sulfonate, and vinyl acetate.
45. The process of claim 38, wherein the polymer comprises a reaction product by weight of from about 80% to about 99% C₁ to C₂₀ alkyl (meth)acrylate, from about 0.25% to about 2.5% ethylenically unsaturated carboxylic acid, from greater than 0% to about 3% C₂ to C₈ hydroxyalkyl (meth)acrylate, from greater than 0% to about 3% vinyl aromatic, from 0% to about 1% ethylenically unsaturated monomer containing sulfonic acid, and from 0% to about 8% vinyl ester of a carboxylic acid.
46. The process of claim 38, wherein the polymer comprises a reaction product by weight of from about 80% to about 99% C₁ to C₂₀ alkyl (meth)acrylate, from about 0.25% to about 2.5% ethylenically unsaturated carboxylic acid, from greater than 0% to about 3% C₂ to C₈ hydroxyalkyl (meth)acrylate, from greater than 0% to about 3% vinyl aromatic, from greater than 0% to about 1% ethylenically unsaturated monomer containing sulfonic acid, and from 0% to about 8% vinyl ester of a carboxylic acid.
47. The process of claim 38, wherein the polymer comprises a reaction product by weight of from about 80% to about 99% C₁ to C₂₀ alkyl (meth)acrylate, from about 0.25% to about 2.5% ethylenically unsaturated carboxylic acid, from greater than 0% to about 3% C₂ to C₈ hydroxyalkyl (meth)acrylate, from greater than 0% to about 3% vinyl aromatic, from greater than 0% to about 1% ethylenically unsaturated monomer containing sulfonic acid, and from greater than 0% to about 8% vinyl ester of a carboxylic acid.
48. The process of claim 38, wherein the polymer comprises a reaction product by weight of from about 80% to about 99% 2-ethylhexyl acrylate, from about 0.25 to about 2.5% acrylic acid, from greater than 0% to about 3% hydroxypropyl acrylate, from greater than

0% to about 3% styrene, from 0% to about 1% sodium vinyl sulfonate, and from 0% to about 8% vinyl acetate.

49. The process of claim 38, wherein the polymer comprises a reaction product by weight of from about 85% to about 96% 2-ethylhexyl acrylate, from about 0.25 to about 2% acrylic acid, from greater than 0% to about 3% hydroxypropyl acrylate, from greater than 0% to about 3% styrene, from greater than 0% to about 1% sodium vinyl sulfonate, and 0% to about 8% vinyl acetate.
50. The process of claim 38, wherein the polymer comprises a reaction product by weight of from about 85% to about 96% 2-ethylhexyl acrylate, from about 0.25 to about 2% acrylic acid, from greater than 0% to about 3% hydroxypropyl acrylate, from greater than 0% to about 3% styrene, from greater than 0% to about 1% sodium vinyl sulfonate, and from greater than 0% to about 8% vinyl acetate.
51. The process of claim 38, wherein the polymer comprises a reaction product by weight of from about 85.8% to about 95.55% 2-ethylhexyl acrylate, from about 0.25 to about 2% acrylic acid, about 2% hydroxypropyl acrylate, about 2% styrene, about 0.2% sodium vinyl sulfonate, and from 0% to about 8% vinyl acetate.
52. The process of claim 38, wherein the polymer comprises a reaction product by weight of from about 85.8% to about 95.55% 2-ethylhexyl acrylate, from about 0.25 to about 2% acrylic acid, about 2% hydroxypropyl acrylate, about 2% styrene, about 0.2% sodium vinyl sulfonate, and from greater than 0% to about 8% vinyl acetate.
53. The process of claim 38, wherein the polymer further comprises at least one of a tackifier, an antifoam, a plasticizer, a surfactant, a wetting agent, a protective colloid, filler, a coloring agent, an antiseptic, a biocide, a dispersing agent, a thickening agent, a thixotropic agent, an antifreeze agent, a pH adjusting agent, a corrosion inhibitor, an ultraviolet light stabilizer, a crosslinking promoter, an antioxidant, and another polymer.
54. The process of claim 38, wherein the polymer has a glass transition temperature $\leq -10^{\circ}\text{C}$.

55. The process of claim 38, wherein the polymer has a glass transition temperature ranging from about -85°C to -10°C.
56. The process of claim 38, wherein the polymer has a glass transition temperature ranging from about -85°C to -54°C.
57. The process of claim 42, wherein the polymer has a glass transition temperature \leq -10°C.
58. The process of claim 42, wherein the polymer has a glass transition temperature ranging from about -85°C to -10°C.
59. The process of claim 42, wherein the polymer has a glass transition temperature ranging from about -85°C to -54°C.
60. The process of claim 38, wherein the polymer has at least one of:
 - a. a 180° peel as measured by ASTM 3330 on polyethylene at room temperature of from about 70 N/m (0.4 lb/in) to about 210 N/m (1.2 lb/in),
 - b. a 180° peel as measured by ASTM 3330 on corrugated paper at room temperature of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in),
 - c. a 180° peel as measured by ASTM 3330 on polyethylene at -23.3°C (-10°F) of from about 8.7 N/m (0.05 lb/in) to about 35 N/m (0.2 lb/in),
 - d. a 180° peel as measured by ASTM 3330 on corrugated paper at -23.3°C (-10°F) of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in), and
 - e. a shear holding strength as measured by ASTM D3654 of from 50 minutes to about 2000 minutes.
61. The process of claim 38, wherein the polymer has:
 - a. a 180° peel as measured by ASTM 3330 on polyethylene at room temperature of from about 70 N/m (0.4 lb/in) to about 210 N/m (1.2 lb/in),
 - b. a 180° peel as measured by ASTM 3330 on corrugated paper at room temperature of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in),
 - c. a 180° peel as measured by ASTM 3330 on polyethylene at -23.3°C (-10°F) of from about 8.7 N/m (0.05 lb/in) to about 35 N/m (0.2 lb/in),

- d. a 180° peel as measured by ASTM 3330 on corrugated paper at -23.3°C (-10°F) of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in), and
 - e. a shear holding strength as measured by ASTM D3654 of from 50 minutes to about 2000 minutes.
62. The process of claim 42, wherein the polymer has at least one of:
- a. a 180° peel as measured by ASTM 3330 on polyethylene at room temperature of from about 70 N/m (0.4 lb/in) to about 210 N/m (1.2 lb/in),
 - b. a 180° peel as measured by ASTM 3330 on corrugated paper at room temperature of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in),
 - c. a 180° peel as measured by ASTM 3330 on polyethylene at -23.3°C (-10°F) of from about 8.7 N/m (0.05 lb/in) to about 35 N/m (0.2 lb/in),
 - d. a 180° peel as measured by ASTM 3330 on corrugated paper at -23.3°C (-10°F) of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in), and
 - e. a shear holding strength as measured by ASTM D3654 of from 50 minutes to about 2000 minutes.
63. The process of claim 42, wherein the polymer has:
- a. a 180° peel as measured by ASTM 3330 on polyethylene at room temperature of from about 70 N/m (0.4 lb/in) to about 210 N/m (1.2 lb/in),
 - b. a 180° peel as measured by ASTM 3330 on corrugated paper at room temperature of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in),
 - c. a 180° peel as measured by ASTM 3330 on polyethylene at -23.3°C (-10°F) of from about 8.7 N/m (0.05 lb/in) to about 35 N/m (0.2 lb/in),
 - d. a 180° peel as measured by ASTM 3330 on corrugated paper at -23.3°C (-10°F) of from about 175 N/m (1.0 lb/in) to about 438 N/m (2.5 lb/in), and
 - e. a shear holding strength as measured by ASTM D3654 of from 50 minutes to about 2000 minutes.
64. The substrate prepared by the process of claim 38.
65. The substrate of claim 64, wherein the substrate is one of tape and a label.

66. The substrate of claim 65, wherein a release liner is disposed over the polymer.